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EXAMINER

FULLER, BRYAN A

ART UNIT PAPER NUMBER

3676

DATE MAILED: 12/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/653,521	<b>Applicant(s)</b> STEPHENSON ET AL.	
	<b>Examiner</b> Bryan A. Fuller	<b>Art Unit</b> 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This is a second non-final action. Claims 1 – 72 have been rejected using new art.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-7, 8-9, 11-12, 14-19, 21, 26, 29, 31-35, 39, 45, 50, 51, 54-55, 57-59, 62-64, and 69-72 are rejected under 35 U.S.C. 102(b) as being anticipated by Gibb et al (4,923,714).

With respect to claims 1, 3-5, 3, 11-12, 14-15, 16-19, 21, 26, 29, 34-35, 39, 45, 50, 54-55, 57-59, 62-64, and 70-72: Gibb et al teaches in column 2, line 8 – column 8, line 55 and in the abstract a method for treating a well penetrating a subterranean formation, comprising introducing into the well a proppant/sand control particulate of a selectively configured porous particulate material being a porous particulate material manufactured with a non-porous glazing material or treated with a non-porous penetrating layer, coating layer or glazing material such that the apparent density of apparent specific gravity of the selectively configured porous particulate material is less than the apparent density or apparent specific gravity of the porous particulate material and where the strength of the selectively configured porous particulate material is greater than the strength of the porous particulate material. Gibb et al also teaches a

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method wherein the porous ceramic is a relatively lightweight and/or substantially neutrally buoyant particle.

With regard to the fluid being introduced in a non-gelled or any other carrier fluid, the examiner takes official notice that particulate material can be suspended and introduced/pumped into a well in a number of well known carrier fluids, such as brine, fresh water, seawater, liquid hydrocarbon etc.

Gibb et al teaches the use of a natural porous ceramic material coated with an epoxy resin. Gibb et al's invention is inherently capable of trapping or encapsulating a fluid having an apparent specific gravity less than the apparent specific gravity of the matrix of the porous ceramic. If a porous material were coated then it would inherently trap or encapsulate air, which is a gas.

Gibb et al teaches a method wherein the selectively configured porous particulate material has an apparent density from about  $1.1 \text{ g/cm}^3$  to about  $2.6 \text{ g/cm}^3$ . Gibb uses the same porous particulate material that the applicant does, so it would inherently have the same apparent bulk density and the same internal porosity. Additionally, the permeability of the selectively configured porous material is a proppant/sand control is inherently less than the permeability of the porous ceramic.

With respect to claims 6-7 and 69: Gibb et al teaches in column 2, line 8 – column 8, line 55 a method wherein the selectively configured porous particulate material exhibits crush resistance under conditions from about 250 to about 8,000 psi closure stress. Since Gibb et al uses the same porous particulate material and some of

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the same coating material it inherently exhibits crush resistance under conditions as high as 10,000 psi closure stress.

With respect to claims 9 and 51: Gibb et al teaches in column 2, line 8 – column 8, line 55 a method wherein the porous ceramic inherently has a porosity and permeability such that a fluid may be drawn at least partially into its porous matrix by capillary action.

With respect to claims 31-33: Gibb et al teaches in column 2, line 8 – column 8, line 55 a method wherein the size of the selectively configured porous particulate material is between from about 200 mesh to about 8 mesh, wherein the coating layer is present in an amount of from 0.5 to about 10% by weight of total weight, and wherein the thickness of the coating layer of the selectively configured porous particulate is from about 1 to about 5 microns.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Bourne et al (5,964,291).

With respect to claim 10: Gibb et al teaches the features as previously claimed except for wherein the penetrating material may be drawn at least partially into its porous matrix using a vacuum and/or may be forced at least partially into its porous matrix under pressure. Bourne et al teaches in column 3, lines 32 – 43 a method wherein the penetrating material may be drawn at least partially into its porous matrix using a vacuum and/or may be forced at least partially into its porous matrix under pressure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Bourne et al, because this method allows the particulate to be kept at a constant pressure while being impregnated.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Arnold (4,078,610).

With respect to claim 13: Gibb et al teaches the features as previously claimed except for wherein the selectively configured porous particulate material is a porous ceramic penetrated with nylon, polyethylene, polystyrene, or a combination thereof. Arnold teaches in column 7, lines 5 - 45 a method wherein the selectively configured porous particulate material is a porous ceramic penetrated with nylon, polyethylene, polystyrene, or a combination thereof. Therefore, it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Arnold, because this method allows a substantial reduction in friction loss is achieved at the pressures employed which may be as high as 3,000 to 10,000 psi or more.

7. Claims 20, 22 – 25, and 47 - 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Brannon et al (6,364,018).

With respect to claim 20: Gibb et al teaches the features as previously claimed except for wherein the non-gelled carrier fluid contains a friction reducer. Brannon et al teaches in column 2, lines 1 - 15 a method wherein the non-gelled carrier fluid contains a friction reducer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Brannon et al, because the reduction in friction allows for a treatment fluid that is more efficiently transported downhole.

With respect to claims 22 and 23: Gibb et al teaches the features as previously claimed except for wherein the well is laid out in a specific manner. Brannon et al teaches in column 2, lines 34 - 49 a method wherein the well is laid out in a specific manner. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Brannon et al, because the relatively lightweight and/or substantially neutrally buoyant particle material may eliminate the need for gellation of carrier fluid, thus elimination of a source of potential proppant pack and/or formation damage.

With respect to claims 25, and 47 - 49: Gibb et al teaches the features as previously claimed except for wherein the selectively configured porous particulate material is a porous particulate material having a non-porous and glazed surface and the inherent qualities that this encompasses. Brannon et al teaches in column 8, lines 27 - 47 a method wherein the selectively configured porous particulate material is a porous particulate material having a non-porous and glazed surface and the inherent qualities that this encompasses. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Brannon et al, because the relatively lightweight and/or substantially neutrally buoyant particle material may eliminate the need for gellation of carrier fluid, thus elimination of a source of potential proppant pack and/or formation damage.

With respect to claim 24: Gibb et al teaches the features as previously claimed except for wherein the porous particulate material has a maximum length-based ratio of equal to or less than about 5. Brannon et al teaches in column 6, lines 37 - 41 a method wherein the porous particulate material has a maximum length-based ratio of equal to or less than about 5. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Brannon et al, because the relatively lightweight and/or substantially neutrally buoyant particle material may eliminate the need for gellation of carrier fluid, thus elimination of a source of potential proppant pack and/or formation damage.

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Schutze et al (3,149,674).

With respect to claim 27: Gibb et al teaches the features as previously claimed except for wherein the porous particulate material is a polyolefin. Schutze et al teaches in column 1, line 19 – column 4, line 30 a method wherein the porous particulate material is a polyolefin. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Schutze et al, because these particulates are easy to handle in a wet or dry condition.

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Ramesh et al (US 2003/0050432).

With respect to claim 28: Gibb et al teaches the features as previously claimed except for wherein the coating layer or penetrating material is an ethyl carbamate-based resin. Ramesh et al teaches in paragraphs [0059] and [0060] a method wherein the coating layer or penetrating material is an ethyl carbamate-based resin. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Ramesh et al, because this resin improves resistance to chipping.

10. Claims 36 – 37, 40 – 42, and 65 – 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Todd et al (6,311,773).

With respect to claims 36 – 37, 40 – 42, and 65 – 67: Gibb et al teaches the features as previously claimed except for wherein the carrier fluid is a specific foam or gas. Todd et al teaches in column 7, lines 3 - 13 a method wherein the carrier fluid is a specific foam or gas. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view

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of Todd et al, because these carrier fluids quickly break into a thin fluid and allows the proppants to better contact the fracture.

11. Claims 38 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al in view of Nguyen et al (5,960,878).

With respect to claim 38: Gibb et al teaches the features as previously claimed except for wherein the fluid pumped into the well further comprises an additional additive. Nguyen et al teaches in column 4, lines 54 - 60 a method wherein the fluid pumped into the well further comprises an additional additive. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Nguyen et al, because adding a surfactant can improve or facilitate the impregnation and/or coating of the particulate.

With respect to claim 46: Gibb et al teaches the features as previously claimed except for wherein the selectively configured porous particulate material is used as a gravel pack. Nguyen et al teaches in column 5, lines 21 - 33 a method wherein the selectively configured porous particulate material is used as a gravel pack. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gibb et al's method in view of Nguyen et al, because gravel packing is a common method of using fracturing fluids. Gravel packs prevent fines or formation particulate migration into the wellbore with production of formation fluids from the subterranean formation.

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12. Claims 43 – 44, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibb et al and Todd et al as applied to claims 40 and 66 above, and further in view of Irani (5,950,727).

With respect to claims 43 – 44 and 68: Gibb et al and Todd et al teach the features as previously claimed except for wherein the liquefied gas or foamed carrier fluid is a mixture of liquid carbon dioxide and nitrogen. Irani teaches in column 3, line 39 – column 4, line 65 a method wherein the liquefied gas or foamed carrier fluid is a mixture of liquid carbon dioxide and nitrogen. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the combination of Gibb et al's and Todd et al's method in view of Irani, because the liquefied gas or foamed carrier fluid will lower the viscosity of the mixture.

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1 - 72 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan A. Fuller whose telephone number is (571) 272-8119. The examiner can normally be reached on M - Th 7:30 - 5:00 and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian E. Glessner can be reached on (571) 272-6843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian E. Glessner  
Supervisory Patent Examiner  
Art Unit 3676

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